

BLUEPRINTS OF THE COSMOS

ABSTRACT The causal relationship between cymatic pattern and Hindu-Yantra exposes the essential pattern underlying the universe. Phenomena that confirm this blueprint are convergent evolution¹, stigmergy² (swarm-intelligence), chaos/complexity theory³, exaptation⁴, gestalt⁵, Plato's-problem⁶ and perhaps even sympathetic magic⁷.

The unified-field and collective unconscious⁸ are the same; science explains the metaphysical. Ancient Yantra-Mandalas catalogue the morphology of the unified-field.

Cross-referencing quantum theory, biologist Rupert Sheldrake, Carl Jung and media-analyst Marshall McLuhan reveals this new Gestalt. Symbols are the keys to understanding reality. Systems Theory is an important new paradigm.

¹ In evolutionary biology, **convergent evolution** is when organisms not closely related independently evolve similar traits as a result of having to adapt to similar environments or ecological niches. In cultural evolution, *convergent evolution* is the development of similar cultural adaptations to similar environmental conditions by different peoples with different ancestral cultures.

² **Stigmergy** is an organizing principle in which individual parts of the system communicate with one another indirectly by modifying their local environment. Termite mounds are a classic example but cells do it and now computers are doing it too. Available at <http://evolutionofcomputing.org/Multicellular/Stigmergy.html>

³ **Complexity Theory/Chaos Theory** studies systems that are too complex to predict, but nevertheless exhibit underlying patterns that illuminate our increasingly complex world. Complexity Theory has only really developed since computers are now able to undertake the massive computations necessary to uncover its mysteries. Prof. Stephen Hawking has stated, "The next century will be the century of complexity". Mainstream concepts are; tipping points, the butterfly effect and six degrees of separation. Available at <http://complexity.orcon.net.nz/>

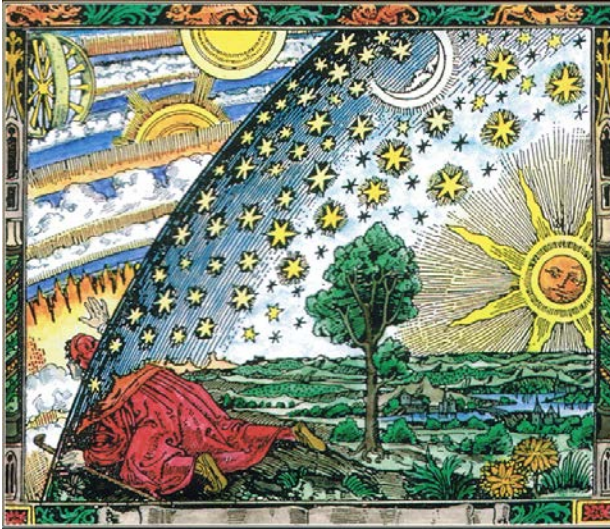
⁴ **Exaptation** Use of a structure or feature for a function other than that for which it was developed through natural selection.

⁵ **Gestalt**. A physical, biological, psychological, or symbolic configuration or pattern of elements so unified as a whole that its properties cannot be derived from a simple summation of its parts.

⁶ **Plato's problem** is the term given by Noam Chomsky <http://www.chomsky.info/> to the gap between knowledge and experience. Plato's Problem refers to the problem of explaining a "lack of input." Solving Plato's Problem involves explaining the gap between what one knows and the apparent lack of substantive input from experience (the environment). Plato's Problem is most clearly illustrated in the Meno dialogue, in which Socrates demonstrates that an uneducated boy nevertheless understands geometric principles.

⁷ **Sympathetic magic** is a major component of ancient or mythical thought: a belief that an effect on one object can cause an analogous effect on another object, without an apparent causal link between the two objects. For instance, many folktales feature a villain whose "life" exists in another object, and who can only be killed if that other object is destroyed. The plant *Hepatica acutiloba* has leaves that look like a human liver, and is believed to have a beneficial effect on liver complaints.

⁸ **Collective unconscious**-realm of archetypes; patterns of consciousness, universal principles which are the central focus for emotionally charged ideas, memories, dreams, feelings and experiences. Available at http://members.aol.com/ht_a/IsisDawn/jung2.htm



Peering through the cosmic sphere - illustration from 'L'atmosphère: météorologie populaire', Paris 1888, by Camille Flammarion.

RATIONALE AND BACKGROUND

"...the knowledge of pattern is the beginning of every practical wisdom." [Sean Kane, 1998]

EVOLUTION & MORPHOGENESIS

Darwin's theory of evolution is incomplete; evolution by random mutation is a slow and precarious process. The leafy Sea dragon evolved into a seaweed shape for protective camouflage, to look a bit like seaweed might increase conspicuousness and be dangerous.



Leafy Sea dragon (*Phycodurus eques*).

With kind permission from ©Jeffrey Jeffords, <http://divegallery.com>



Fucus distichus

Seaweed.

The Indonesian-mimic-octopus is an even more unlikely creature of random mutation. Perhaps unsurprisingly undocumented until 1998 it transmogrifies into at least 17 different life forms. On meeting an enemy it metamorphoses into a creature unpalatable to that predator.



Mimic octopus as a flounder... as a poisonous sea snake (sea snake above)... as a crinoid...

With kind permission from © Photo/copyright: MichaelAW.com



Mimic octopus as a sea star... as a mantis shrimp... and finally as himself.

©Thaumoctopus mimicus Norman & Hochberg, 2005

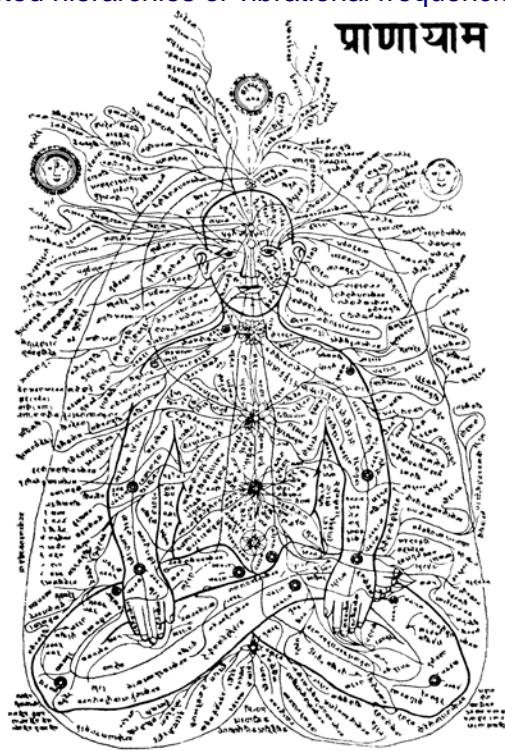
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Statistically Darwinian-evolution cannot be the only mechanism operating such a phantasmagorical and intelligent series of transmogrifications. It is as if all living things have a library of patterns or blueprints that they can access when needed.

A life form is a map of the 'forces' or morphogenetic instructions that caused it to be. This idea of a cosmic blueprint is an ancient one; Vedic philosophers consider everything has an internal essence informing its external appearance.

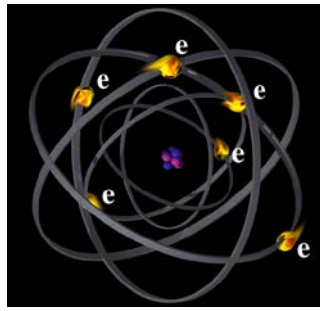
"There are other invisible writings, secretly impressed on the leaves of Nature's book...being traced...on the...tablets of our...hearts...These internal and spiritual characters...the interior writing, may...be the cause and origin of the things which do appear." [Rosicrucian. Fludd, Robert (1574-1637)]

Biologist Rupert Sheldrakeⁱ suggests the theory of morphic-resonance, a vibrational archive of knowledge intercommunicating ideas, strategies and behaviours that each species has specific timeless access to. He describes our bodies as "nested hierarchies of vibrational frequencies" [Sheldrake, R. 1995]



Ancient Sanskrit Diagram of Energy Centres or Chakras and Nadis.

The Hermetic philosophy of macrocosm and microcosm (as above-so below) is said to hold the key to all mysteries. The Cosmos is mirrored in man the small universe. The easiest way to visualize this is to compare the atom, that smallest of building bricks, with our universe, the electron orbits the nucleus in the same way as the planets orbit our sun.

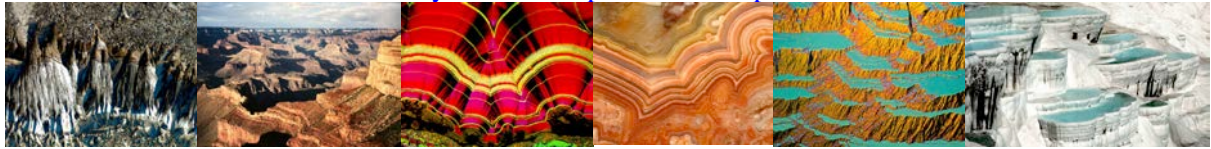


An atom

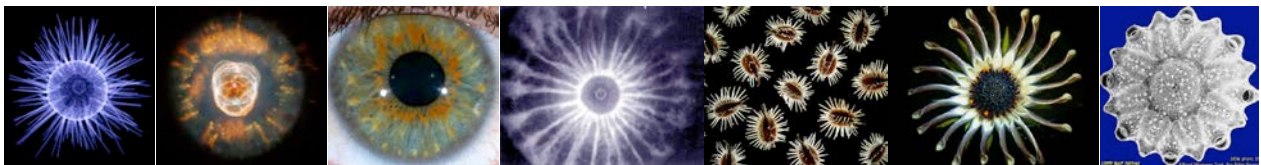


The Solar System

Many of nature's patterns are repeated.



Nickel nitrate 45x. Grand Canyon. Vitamin C 10x. Agate. Quartz 40x. Pamukkale, Turkey.
 ©Edy Kieser ©M.I. (Spike) Walker ©Ted Kinsman ©John I. Koivula



Sea urchin Xray. Eskimo Nebula. Eye. Supernova. Carrot seed 2x. Osteospermum 0.5x. Diatom.

©Ted Kinsman ©NASA/Andrew Fruchter (STScI) ©Anthony L. Peratt ©Viktor Sykora ©G. Romero de Pérez ©Ralf Nötzel



Salt and Pepper. Frog Embryos. Sun. Ovum and Sperm. Red blood cells.

©D. McCarthy, A. Cavanagh ©M. Klymkowsky ©R. Nemiroff, J. Bonnell ©Yorgos Nikas wellcomeimages ©Dennis Kunkel



Uterine lining. Toadflax, Purslane, Lamourouxia viscosa, Palm seeds. Pollen 1500x Pollen 2000x.

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Starwort. Butterfly wing at 260x, 500x. Snailskin 200x. Sharkskin 77x. Craspedites nodiger. NGC 4946.

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Water picture 102,528 Hz. Cauliflower. Tapeworm mouth 100x. Skin. Pine tree 40x.

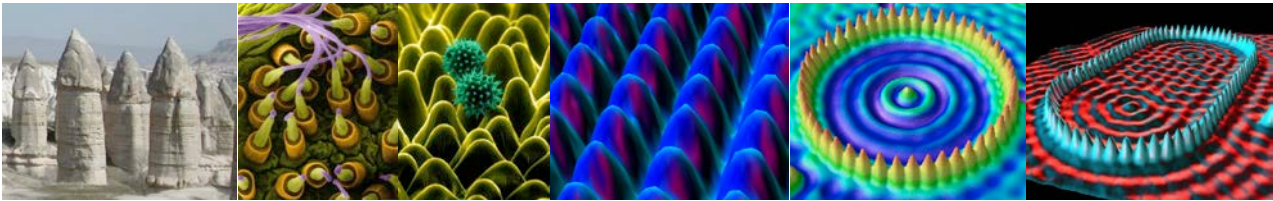
Diatom 50x.

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Cappadocia, Turkey. Spider spinning. Sunflower pollen. Nickel atoms. 'Atom Corrals' of iron on copper.
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Spawned from spiraling DNA, flotsam of the big bang and millennia of evolution we spin in a web of infinite universes.

THE HUMAN BRAIN - The brain loves patterns and symbols...

- Audible; rhythms, music, bird-song.
- Visual; stars & planets, snowflakes, camouflage, fish/bird-formations.
- Semantic;⁹ language, metaphor, archetypes.
- Mathematical; fractals, geometry, computer language, formulae, music notation.
- Biological; evolution, cellular-automata-theory, circadian rhythms.
- Behavioral; routines, habits, dance, superstition, ritual, O.C.D.

Jackson Pollock's paintings conform to a fractal pattern, he instinctively employed chaos dynamics. Seemingly symmetry is an intrinsic human aesthetic based on predetermined preferences. The human fetus stores pattern recognition systems as early as two to three months after conception; pattern evaluation is the basis of memory and is how we make sense of our world. Neural plasticity; growing new neural networks melds our distinct personalities. Originating pattern is our unique talent, to invent, create and evolve cultures.



Cosmic Egg-Hildegard of Bingen-Vision of Heaven Burmese astronomical C19. The Human World C19. Wheel of Nature, 1898.

The brain, like a black hole sucks in pattern, dissects, reshuffles, edits and hones creating new meaningful constructs. Our unconscious holds subliminal impressions too subtle to register with the conscious mind.



Archetypes: Angel Mermaid day of the dead The hero's quest The warrior Dragon Goddess

Jung believed the 'Collective-Unconscious' is encrypted within the psyche of the universe at a higher consciousness level. The most profound aspect of the psyche is the collective unconscious; the source of instinct, symbol, myth and archetypesⁱⁱ, haunting our brains, biology and the physics underpinning our biology.

"myth is the secret opening through which the inexhaustible energies of the cosmos pour into human cultural manifestation." [Campbell, Joseph. 1993]

⁹ **Semantics** - The study of the relationships between various signs and symbols and what they represent.

"[Myths] orient people to the metaphysical dimension, explain the origins and nature of the cosmos...and...address themselves to the innermost depths of the psyche" [Campbell, J. 2002]

"...they are...dreams which...emerge from the unconscious mind; [to] reveal archetypes of the collective unconscious" [Jung].

'It is by logic that we prove but by intuition that we discover.' Poincaré

'Intuition is the source of scientific knowledge.' Aristotle

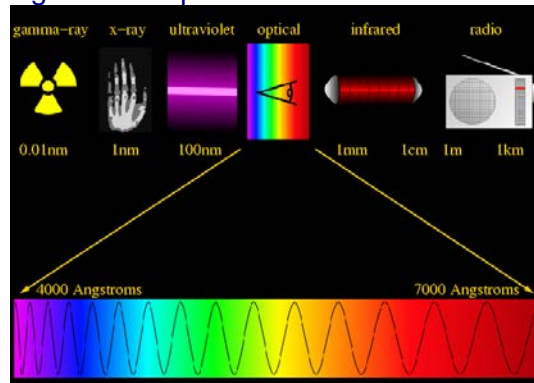
Descartes, Einstein and Tesla all gained inspiration through dreams and visions.

THE SCIENCE

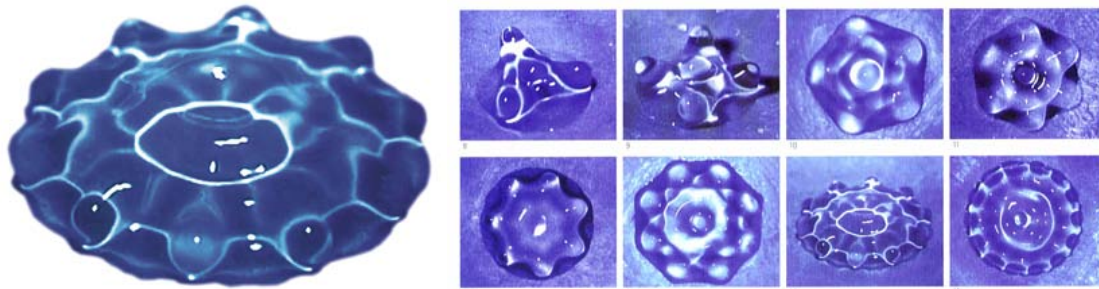
Superstring-theoryⁱⁱⁱ implies an entangled^{iv} conscious universe^v operating at the Planck scale, a unified-field^{vi} of interconnected thought potential intercommunicating all the ideas and inspirations of the past and the future; the ancients understood this metaphysical space as the astral realm or 'the collective-unconscious'¹⁰. [Dean Radin, 1997] [Bludorf, Franz. & Fosar, Grazyna, 2001]

'In all chaos there is a cosmos, in all disorder a secret order' [Jung]

Sound, heat and light are all energetic-wave-phenomena in different manifestations.



Sound creates beautiful geometric shapes when moving through water or particles.

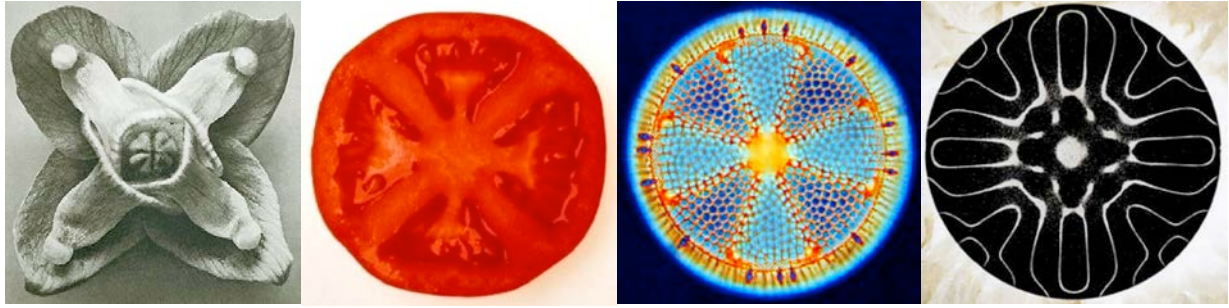


Cymatic patterns in water by Alexander Lauterwasser. With kind permission from ©Alexander Lauterwasser www.wasserklangbilder.de

The science of cymatics (pioneered by Robert Hooke in 1680 and further developed by Ernst Chladni^{vii} in 1787, Hans Jenny^{viii} in 1967 and most recently Alexander Lauterwasser) reveals the patterns contained within sound. The kaleidoscopic cymatic^{ix} patterns that are animated by sound waves resonate throughout nature and art, proof of the templates underpinning creation.

¹⁰ Also known as the ... unus mundus, world soul, astral realm, universal consciousness, C.G. Jung borrowed from a student of Paracelsus, Gerhard Dorn (Dorneus), who called it **the unus mundus, the "Unified World"**. The energetic principle of this unus mundus was known as **the world soul (anima mundi)** ... in the natural philosophy of the Middle Ages. Synchronicity is based upon this medieval concept of the world soul and the unus mundus that corresponds to Wolfgang Pauli's world of "background physics" ... connections between radioactivity and space-time on a psychophysical level...

Available at: <http://www.valdostamuseum.org/hamsmith/ArchMandMus.html>

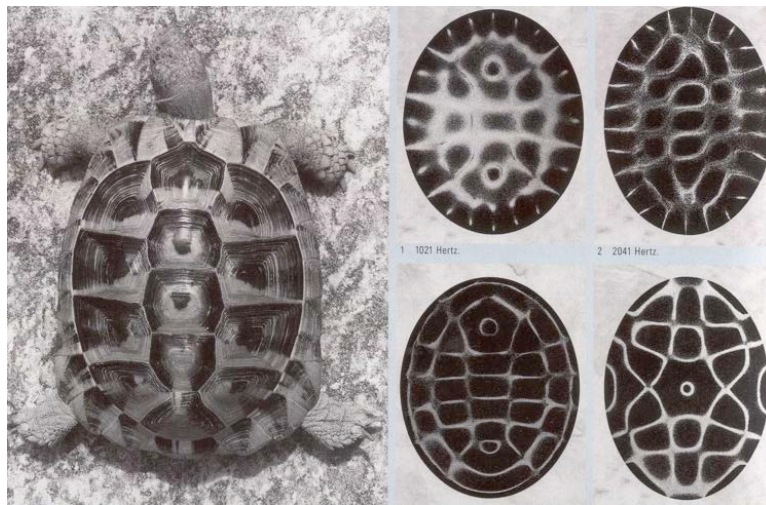


Barren-wort 24x.

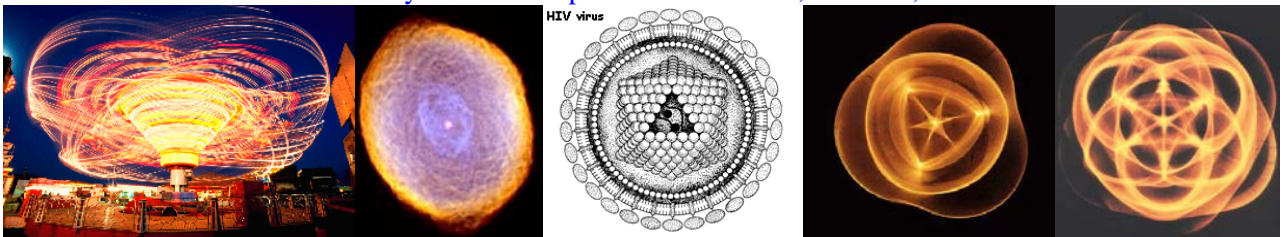
Tomato.

Diatom 900x. Cymatic image Chladni 4341 Hz
©Dr. Stephen S. Nagy ©Alexander Lauterwasser

The tortoise, so often seen as supporting the world in creation myths, has a striking similarity to cymatic sound pattern within its shell. It was a tortoise shell that was used to create the ancient Chinese divination system of the I-Ching. Marie Louise Von Franz suggests the I-Ching as a perfect mathematical model of our DNA. Could this creation myth be an explanation of how our very existence is supported and made possible by DNA? [Von Franz, 1975]



Picture of tortoise beside cymatic sound pictures at 1021 Hz, 2041 Hz, 1088 Hz and 1085 Hz.



Fairground lights.
©Robert Anderson

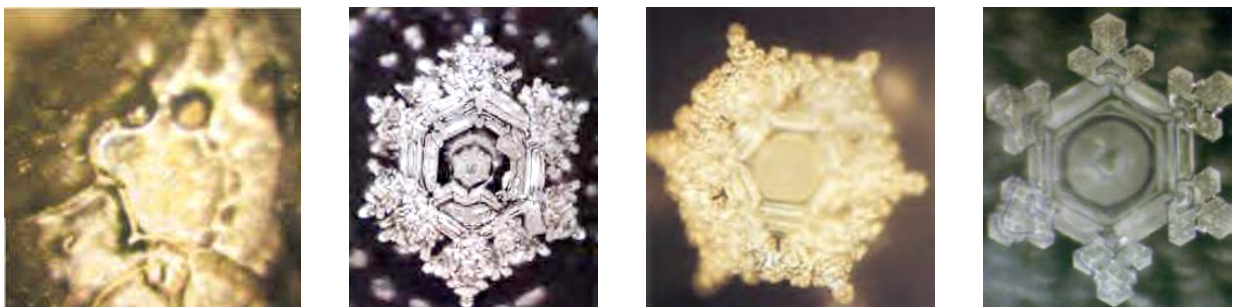
Spirograph Galaxy.

HIV virus.

Cymatic water sound images.

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Chaos theory views the cosmos as an algorithmic morphogenetic supercomputer.

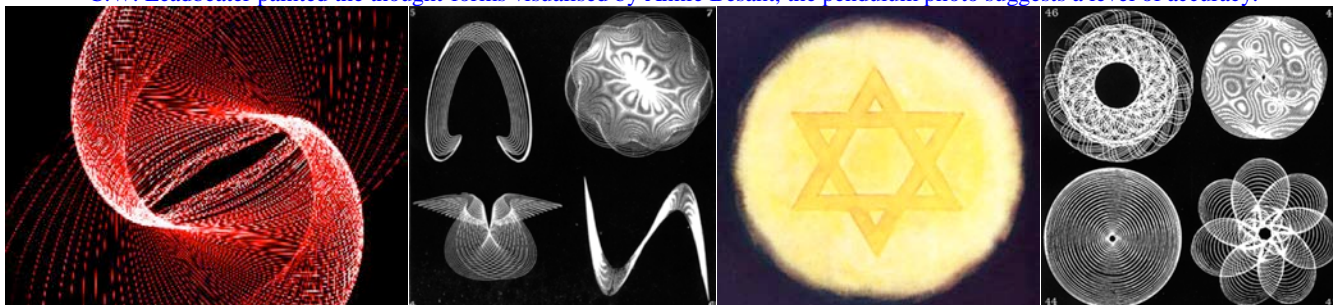


Images illustrating Doctor Masaru Emoto's research,
Fujiwara Dam, before prayer. Fujiwara Dam, after prayer. Love and Appreciation.

Thank you.

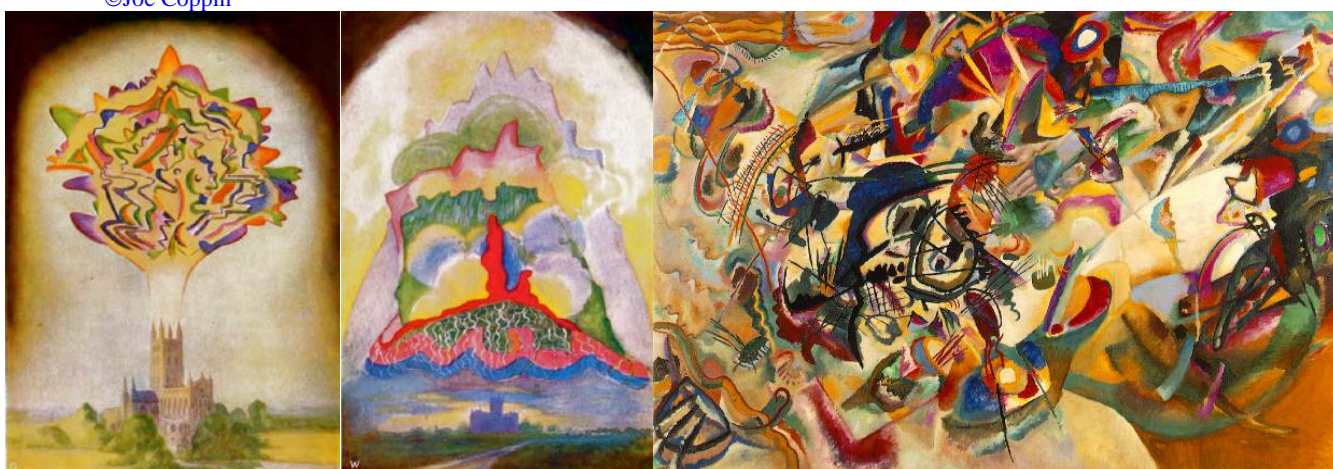
Dr.Emoto's research^x using human intention to change the structure of water demonstrates thoughts modify water-based-life. William Tiller's pH-experiment^{xi} proves focused meditation can change and activate space; astonishingly this transmutability is conserved indefinitely. Both experiments demonstrate thoughts temper matter. Dean Radin's^{xii} experiments' demonstrate human prescience. Ben Libet's research illustrates we make decisions before becoming aware of them, some feel this indicates lack of free will but it may simply indicate the nested vibrational hierarchies described by Sheldrake.

C.W. Leadbeater painted the thought-forms visualised by Annie Besant, the pendulum photo suggests a level of accuracy.



Pendulum vibration photo 2005. Pendulum Vibration Figures. Conception of cosmic order.Thought conceptions.

©Joe Coppin



The music of Gounod & Wagner envisioned by Leadbeater

Wassily Kandinsky, Composition VII (Der Blaue Reiter: 1913)

Wassily Kandinsky^{xiii} inspired by C.W.Leadbeaters astral-realm paintings initiated 'abstract-expressionism'. Leadbeater painted the astral-realm as it was described to him by a medium; conversely the work of Emoto, Radin, Tiller and Libet is scientifically rigorous, not esoteric, a true topography of the ability of the mind to alter reality.

LOST KEYS

Cymatic patterns, Dr. Emoto's frozen water and numerous natural geometries tantalisingly demonstrate the morphology of the cosmos and that consciousness can re-mould the material world. The Star of David is an Alchemical representation of the Quintessence^{xiv} the force that controls the essence of organic life. This would lend Solomon's Seal (the Star of David) a more profound level of meaning. Is it a deliberate geometric description of the life force?

Cymatic pattern mirrors water, honeycomb and alchemical portrayals of the cosmos.



Solomon's Seal. Honeycomb. Watermolecule 25x. Hexagon geometry. Solomon's Seal C3. Cymatic 37,9Hz. Giant's causeway. Snowcrystal 25x.
©Raul M. Gonzalez ©Alexander Lauterwasser ©Ted Kinsman

'Symbolism is the language of the Mysteries, [and] all Nature...to communicate...thoughts which transcend the limitations of language...those who can discover its lost keys may open with them a treasure house of philosophic, scientific, and religious truths.' [Manly P.Hall, 2003]

Power invested symbols are primordial. The Sun's astrological symbol, a dot within a circle, is a primeval description of the Prima-Causa. The circle symbolizes eternity or primal-power; the dot (Bindu) pinpoints the emergence of that power.



The bindu, sacred point of origin and return



Cymatic pattern in powder.

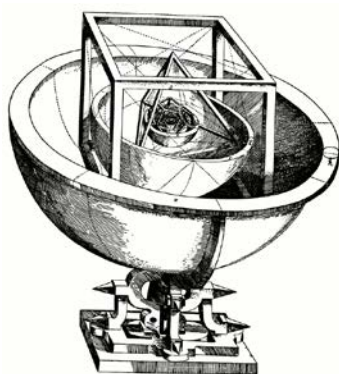
Ring Nebula.

Helix Nebula.

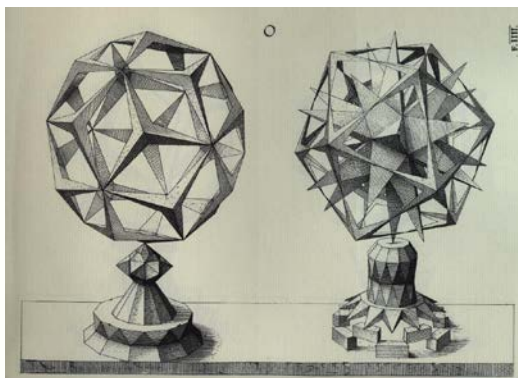
Cats eye nebula.

Nebula images from http://hubblesite.org/gallery/album/nebula_collection/

Pythagoras^{xv} understood the elegant lawfulness of geometry consubstantiated¹¹ with sound as the foundation of a universe in sonic consonance. An underlying algorithm has been championed by many; from Pythagoras and Plato, to David Bohm, Carl Jung, neuroscientists and complexity theorists^{xvi}.



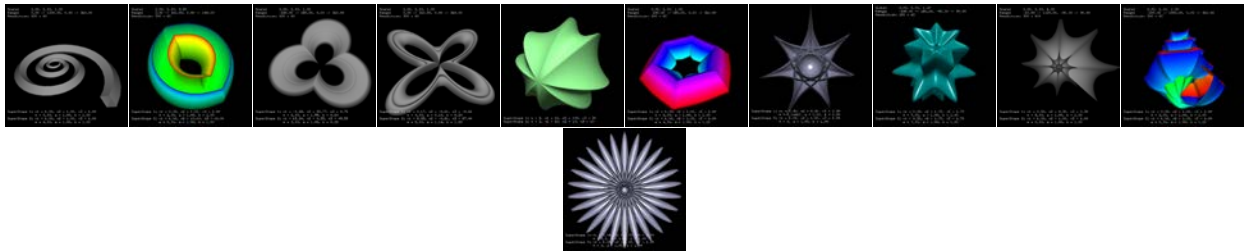
Kepler's Platonic solid Solar system, *Mysterium Cosmographicum* (1596).



Platonic solids.

Belgian Scientist Johan Gielis has created a Superformula interlinking shapes found in nature with a single mathematical equation. Previous equations have tended to "exist in isolation". Johan Gielis's Superformula generates a spectacular array of symmetrical organic forms, including diatoms, starfish and flowers. Computer technology allows the apparently endless shape-generating ability of this equation! The Superformula combines the equation for a circle (r^2 , where r =radius) with that for a superellipse. The Superformula generated shapes share interesting parallels with the mechanism of gene expression. The phenotype of an organism is a direct expression of its genotype, variables created by DNA nucleotides control the shape of an organism. The science of genetics assumes the evolution of organisms, and genes, from a common "ancestor" or ancestral gene, so too do Supershapes originate from the Superformula, where the simplest shape, in terms of mathematical description and form, is that of the circle. [Christina Brodie, 2004.] For more details <http://astronomy.swin.edu.au/~pbourke/surfaces/superellipse> & <http://astronomy.swin.edu.au/~pbourke/curves/supershape>.

¹¹ **Consubstantiate** To unite or become united in one common substance, nature, or essence.



3-D supershapes at paul bourke's website

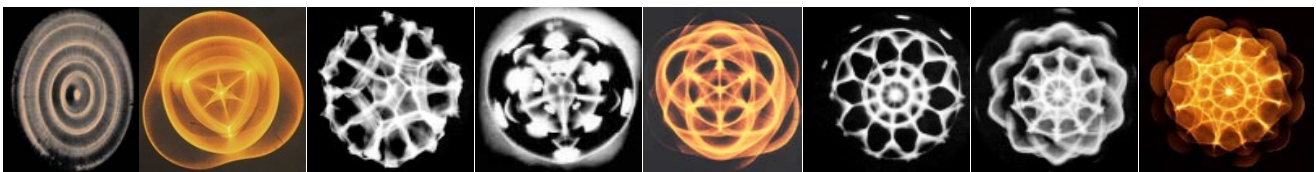


Johann Gielis's homepage <http://www.geniaal.be/html/fs004technology.htm>

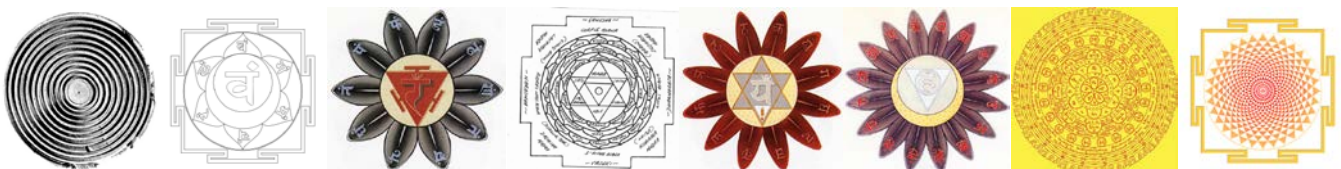
"...symbolism has... the virtue of containing within a few conventional lines the thought of the ages and the dreams of the race. It kindles our imagination and leads us into a realm of wordless thought..."
 [Lin Yutang]

JUNKIE PAGANS MAPPED THE UNIFIED FIELD 5000 YEARS AGO

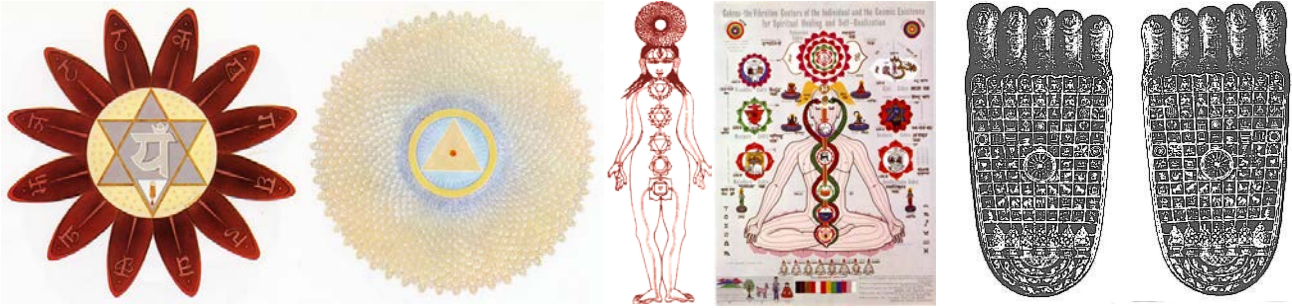
Old Indian diagrams of Chakras and Yantra-Mandalas are strikingly similar to the geometry of sound. The Indians understood quantum physics; that the body and the Universe is a cloud of vibrating energy, and that the secret of health and happiness is to keep these layers of energy in tune.



Low frequency sounds produce circles as the frequency increases sound patterns are more intricate and complex
 With kind permission from © Photo/copyright: Alexander Lauterwasser, homepage: www.wasserklangbilder.de



The Bindu is the Hindu description of the first energy; followed by Chakra and Yantra-Mandala pictures.



Diagrams of the Chakra system and the Hindu Mandala, known as Yantra echo cymatic structures. The earliest representation of Buddha was by his footprint, which seems to contain many interesting esoteric symbols that are redolent of cymatic pattern.

Once considered a primitive pagan religion, Hinduism displays a subtle prescience of quantum theory. Current science seems a palimpsest¹² of more confounding Vedic truths. Quantum Mechanics and the immense space within atomic structure confirm reality is holographic; if a marble represented a hydrogen nucleus, the electron orbiting it is two miles away; objects we consider solid are overwhelmingly nothingness^{xvii}, reality is an illusion^{xviii}.

Matter is composed of negligible bits! Yet space is packed with a plethora of potential. I found this concept although scientifically logical, impossible to conceptualise until I read David Bohm's vision of the holographic universe.

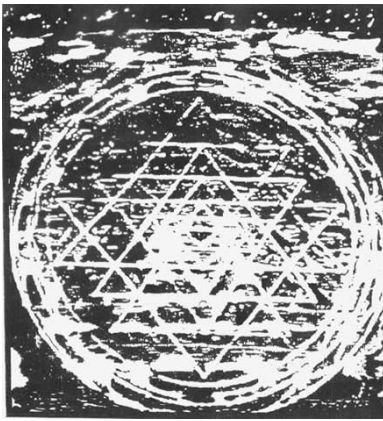
"One day it will have to be officially admitted that what we christened reality is an even greater illusion than the world of dreams". [Dali]

If you visualise quantum reality as a cloud of undulating glitter, each particle is a holographic film transparency, which contains all of the information needed to visualise the material world from that particular angle. This vision in combination with an understanding of how our senses^{xix} synthesise reality by only processing 20 conscious moments^{xx} per second out of a possible 20,000, you can begin to understand how reality may not be how it so virulently appears. Hindu^{xxi} and Buddhist^{xxii} texts sit easily in the baffling arena of quantum thought. The illusiveness of material reality is the focus of the Upanishads^{xxiii} c.3, 000BCE.

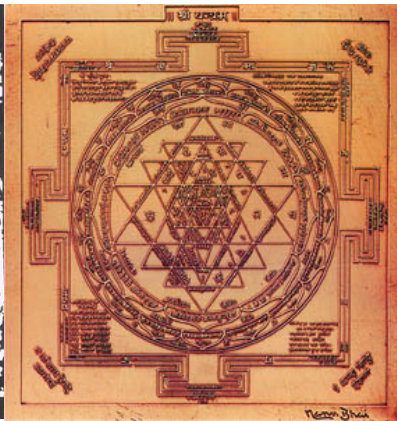
<p>A mathematical truth is timeless, it does not come into being when we discover it. Yet its discovery is a very real event. Erwin Schrödinger</p>	<p>Realization is nothing to be gained afresh; it is already there. All that is necessary is to get rid of the thought 'I have not realized'. Sri Ramana Maharshi</p>
<p>Physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world. - Einstein</p>	<p>All such notions as causation, succession, atoms, primary elements...are all figments of the imagination and manifestations of the mind. - Buddha</p>

The Sri-Yantra-Mandala is the image of the OM mantra, the primordial Hindu sound of creation. When OM is intoned into a tonoscope, it first produces a circle. As the tone is completed, the circle is filled sequentially with concentric squares, triangles and finally, as the "mmm" dies away, the Sri Yantra^{xxiv}.

¹² **Palimpsest** (as in "manuscript") *n.* : a manuscript (usually written on papyrus or parchment) on which more than one text has been written with the earlier writing incompletely erased and still visible



Om sounded in a tonoscope.
©Madhu Khanna



Sri yantra mandala.



3D Sri Yantra.

It is stunning how similar cymatic sound pattern is to the yantra, the Star of David at the centre is surrounded by lotus petals, spookily similar to the geometry of the yantra.

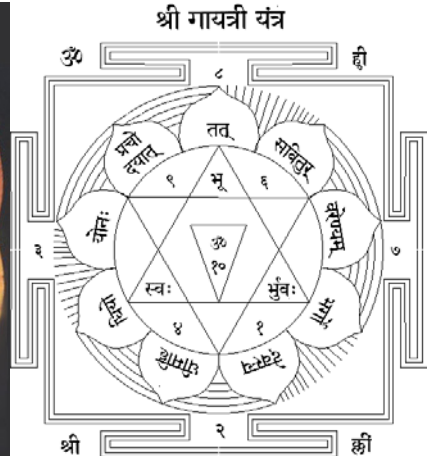
Chakra Centres



Cymatic Light Picture



Traditional Yantra



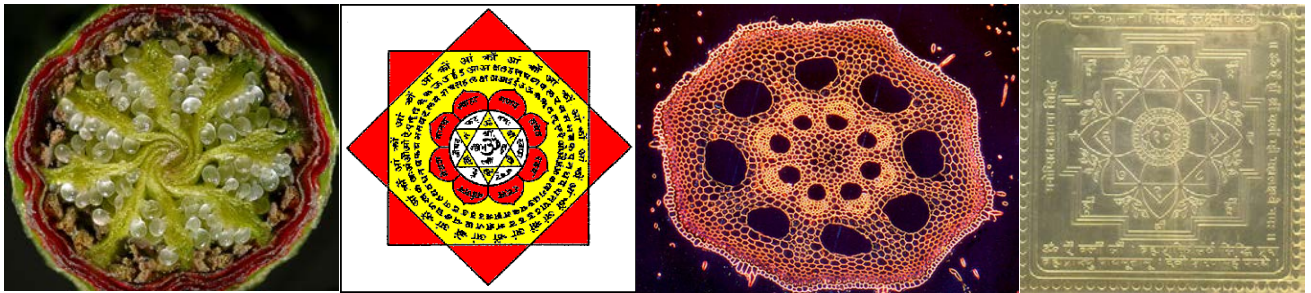
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In Sanskrit, 'YANTRA' means machine or absorber of cosmic energy, Yantra resonate with our solar system, a tuning fork connecting to universal consciousness. Vedic scholars understood the symbiotic relationship of wave energy; that sound vibrations ARE geometry^{xxv}. The entrainment phenomenon, where weak pulsations are engulfed by stronger ones, would create the frequency of OM within the mantra-chanting devotee. The Hindus knew the transubstantiating¹³ ability of sound^{xxvi} and geometry.



3D Sri Yantra. Sri yantra, Kashmir c.C12th-15th. Yantra Nepal, C19. Yantra Nepal C18. Kuma Meru Yantra.

¹³ **Transubstantiate** To change (one substance) into another; transmute.



Poppy seed bud.
©Shamuel Silberman.

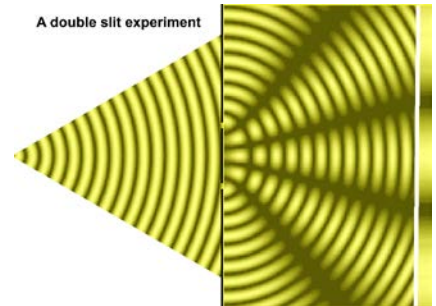
Mahaganapati Yantra

Horsetail stem 20x
©Lisa R. Grillone.

Shri Manokamna Siddhi Lakshmi

Whether the unified field/collective unconscious is considered divine is a matter of semantics, it may be divine but it is also scientific. You can call it God, OM or Quantum Physics.

The scientific paradigm is held in high esteem but String Theory, M Theory and the Unified Field are mythologies constructed to explain a series of baffling experiments such as the classic double slit electron experiment. The Hindu philosophies contained in the Vedic manuscripts are equally scientific.



Conclusion

Antiquity is bejewelled with oracles seeking esoteric guidance; opening a window^{xxvii} to the wisdom of the universe. Yantra connect to the macrocosm^{xxviii}.

"the divinatory act can create a "hole" in the "field of consciousness through which the autonomous dynamism of the collective unconscious can break in" [von Franz, 1982].

Alchemy, Rosicrucianism, Freemasonry, Hinduism and Buddhism, are well-trodden paths to the same destination. Mandalas, alchemical-diagrams and tarot are enlightenment 'flash cards'. Paradoxically, quantum mechanics confirms the alchemists were correct; consciousness can create and change reality. Consciousness is the philosophers stone, searched for since the time of Babylonian Hero Gilgamesh.



Navajo Blanket, Artemis vase, Athens, 680 BCE., Buddha's Footprints, Nazi Logo.

"The word 'swastika' comes from the Sanskrit *svastika* - 'su' meaning 'good,' 'asti' meaning 'to be,' and 'ka' as a suffix,"

Throughout history symbols dramatically change meaning, notably the swastika, an esoteric Eastern symbol of the four elements perverted by the Nazis. This change in meaning does not exclude the existence of an ordering intelligence; perhaps it suggests a weaker connection to the collective unconscious, disconnection from the most resonant path.

If so an evaluation of human symbolic perception could be understood as an index of human esoteric understanding, a measure of our harmony with the unified field. If there is a collective unconscious there is presumably correct and incorrect, one shape is more syncopated than another, there is a correct pattern to meld toward.

[symbol] goes beyond the individual to the universal...It is the...lower, expression of the higher truth."
[J.C. Cooper. 1978, p.7]

Plato said literacy diminishes ontological awareness, impoverishing experience. Media-analyst McLuhan said all media is an extension of our senses; it affects how we think, the linear nature of the written word

reduces conceptual creativity. He advocated an intuitive phenomenological, jazz 'grotesque' using symbols. Ironically, literacy may have prevented conceptualising a 3D-multi-hierarchical synergistic vision of reality; conversely, symbols encourage free-association. James Kent hypothesizes radical free-association using psychoactive drugs.

'psychedelics "dissolve boundaries" by allowing un-inhibited crosstalk between previously unrelated (or even actively gated) patterns and ideas stored in the connective tissue in our heads.' [Kent, J. 2005]

Perhaps neural receptors occupied by hallucinogens short-circuit¹⁴ our structural blindness to un-encrypt the true isomorphism¹⁵ of our being. Vedic scholars ritually drank^{xxix} haoma-soma^{xxx}, which contains DMT, the chemical James Kent researched.

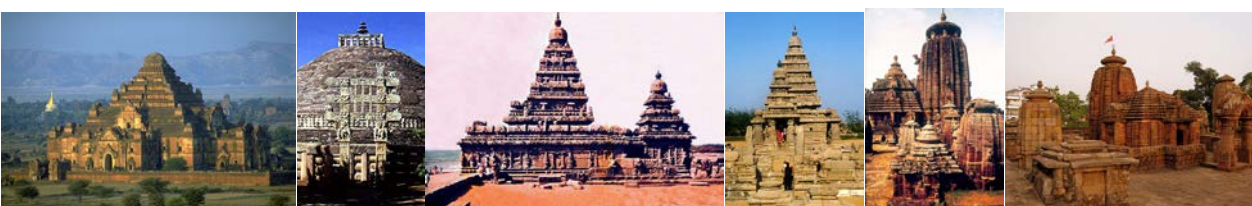


Cymatic water pictures. The tower of Babel c. 3500 B.C. 3D model of a chakra.
 With kind permission from © Photo/copyright: Alexander Lauterwasser, homepage: www.wasserklangbilder.de

In Channel 4's Medicine Men Go Wild [Episode 4¹⁶ Jungle Tripping 27 Jul 2008] Chris and Xand Van Tulleken live with the Asháninka, the indigenous people of the rainforests of Peru. On taking ayahuasca Xand draws a picture of his vision, a perfectly geometric Mayan temple. This suggests the possibility that Aztec, Mayan and Babylonian ziggurats were constructed to the dimensions of drug fuelled Shamanistic visions. This experience reiterates numerous accounts of elaborately tiered temples envisioned by DMT subjects^{xxxi}.



Borobodur, Java C8 Prambanan Temple Java C9 Ta Keo Temple Cambodia 975 CE Angkor Wat Cambodia C9 Gawdapalin Burma C12



Dhammayangyi Bagan Burma C12 Hill of Sanchi c.273BCE Mahabalipuram 625CE Shore Temple C7 Bhuvaneshwar Mukteshwar Lingaraj C11



¹⁴ The phenomena of the 'savant' suggests that underlying neurological structures contain an inherent knowledge of mathematics; this would explain the musical savant and the brain damaged twins who share conversations of otherwise incalculable prime numbers (documented in 'The Man who Mistook his Wife for a Hat') http://fora.tv/2007/10/21/Oliver_Sacks_Musicophilia

¹⁵ **Isomorphism** - elaborate 'hidden' or 'buried' mathematical or morphological similarities between previously unrelated patterns. Logical connections between pre-existing patterns or systems, with a statistical or mathematical relationship.

¹⁶ <http://www.medicinechest.info/episodes/4>



Ziggurat of Ur, Iraq - c.2125 BCE.

Kukulcan, Mexico c.1050 CE.

Tikal Temple 1, Guatemala c.4th CE.

Symbols crystallize concepts; disentangle paradoxes, rhythms and patterns that the conscious mind is unable to resolve, integrating different planes of reality to reveal transcendent truths. [Eliade, 1952]
The symbolism of a society reflects human consciousness at that time, a deep frozen mystical zeitgeist culture map and cryptography of intellectual and spiritual attainment.

The unified-field, the anima-mundi, the world soul, the astral-realm and the collective unconscious are one. Nature contains a selection of jelly moulds, the building bricks of organic life; an archived morphology contained within the database of the unified field - cymatics reveal the alphabet of this vibrating organizational intelligence. Systems theory encourages three-dimensional hierarchical thinking essential to visualizing new gestalts.

The ineffable¹⁷ cyphers of the unified-field have great implications for art, sociology and psychology. Sound manipulation could generate geometry to advance genetic engineering and stem cell research. Architects and artists could create environments that intensify emotions and create synaesthetic^{xxxii} experiences or even raise consciousness. The Martial Art known as Ki-Ai uses the voice to vibrate water molecules within the muscle so violently it causes collapse, if the correct volume and pitch of sound is directed at the heart it can cause death. The Mozart Effect^{xxxiii} and Dolphin Therapy^{xxxiv} document the healing potential of sound.

Sound can be used to hypnotise, charm and seduce; if this force were used with a knowledge of the correct pitch and vibration to shift consciousness or redistribute matter it has both exhilarating and terrifying implications...

"Pythagoras once cured a youth of his drunkenness by prescribing a melody in the Hypophrygian mode in spondaic rhythm."^{xxxv}



The Birth of the world, Nepal: ca. 1900-1925. Accordion style paper manuscript.

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¹⁷ To say that something is "ineffable" means that it cannot or should not, for overwhelming reasons, be expressed in spoken words. It is generally used to describe a feeling, concept or aspect of existence that is too great to be adequately described in words, or that inherently (due to its nature) cannot be conveyed in dualistic symbolic human language, but can only be known internally by individuals. Available at <http://encyclopedia.thefreedictionary.com/ineffable>

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Further Research Ideas

- I. Do mandalas, yantras, kolam and chakras show causal relationships with other geometric structures such as platonic solids, fractals and the Lambda Matrix (which Pythagoras considered the essence of harmony)? Is there a relationship between cymatic pattern and mandalas, yantras, kolam and chakras?
- II. Investigate the evidence that Hindu yantras & mantras and Buddhist mandalas are an ancient attempt to catalogue the unified field. (Lost or forgotten knowledge)
- III. Do yantras and mandalas modify consciousness and do they have specific effects depending on the specific mandala/yantra or does each individual have an individual response, perhaps each individual has a unique synaesthetic experience.
- IV. Human's love symmetry, is it an intrinsic aesthetic: do we have an innate love of geometry is the yantra/kolam/mandala satisfying a genetic need? Do irregular objects upset us, are our aesthetics based on predetermined morphogenetic preferences. Is humanity by nature attracted to 'sacred geometry'? Interestingly, the work of Jackson Pollock can be recognized by analyzing its regularity of distribution that conforms to a fractal pattern, he was instinctively employing chaos dynamics.
- V. To create a codex of images illustrating the conceptual range of the blueprint contained in the unified-field, the morphogenetic formulae for life. To discuss the philosophical, sociological and design implications of this blueprint.

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Artificial Life is devoted to a new discipline that investigates the scientific, engineering, philosophical, and social issues involved in our rapidly increasing technological ability to synthesize life-like behaviors from scratch in computers, machines, molecules, and other alternative media. By extending the horizons of empirical research in biology beyond the territory currently circumscribed by *life-as-we-know-it*, the study of artificial life gives us access to the domain of *life-as-it-could-be*. Relevant topics span the hierarchy of biological organization, including studies of the origin of life, self-assembly, growth and development, evolutionary and ecological dynamics, animal and robot behavior, social organization, and cultural evolution. Available at <http://www.mitpressjournals.org/page/about/artl>

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Edge Foundation, Inc., The mandate of Edge Foundation is to promote inquiry into and discussion of intellectual, philosophical, artistic, and literary issues, as well as to work for the intellectual and social achievement of society. <<http://www.edge.org/>>

Wikipedia.org. <<http://en.wikipedia.org/>>

ⁱ The morphic fields of mental activity are not confined to the insides of our heads. We are already familiar with the idea of fields extending beyond the material objects in which they are rooted: for example magnetic fields extend beyond the surfaces of magnets; the earth's gravitational field extends far beyond the surface of the earth, keeping the moon in its orbit; and the fields of a cell phone stretch out far beyond the phone itself. Likewise the fields of our minds extend far beyond our brains. February 2005 Available at http://www.sheldrake.org/Articles&Papers/papers/morphic/morphic_intro.html

morphic field: The term morphic field includes morphogenetic, behavioural, social, cultural, and mental fields. Morphic fields are shaped and stabilized by morphic resonance from previous similar morphic units, which were under the influence of fields of the same kind. They consequently contain a kind of cumulative memory and tend to become increasingly habitual.

morphic resonance: Through morphic resonance, formative causal influences pass through or across both space and time, and these influences are assumed not to fall off with distance in space or time. Morphic units closely resemble themselves in the past and are subject to self-resonance from their own past states.

morphogenesis: The coming into being of form.

morphogenetic fields: Fields that play a causal role in morphogenesis. Available at <http://www.i-can-soar.com/glossary.htm#morphogenetic>

ⁱⁱ Extracts from Carl Jung's collected works.

The contents of the collective unconscious...are known as archetypes (CW9 (1): 4)...archaic or primordial types, with universal images that have existed since the remotest times (CW9 (1): 5)...They are without known origin, and they can reproduce themselves even where transmission through migration must be ruled out (CW 18:523)...A well-known expression of the archetypes is myth and fairy tale (CW 9 (1): 5,6). The collective unconscious comprises in itself the psychic life of our ancestors right back to the earliest beginnings. It is the matrix of all conscious psychic occurrences... (CW 8:230) An archetype is like an old watercourse along which the water of life has flowed for centuries, digging a deep channel for itself (CW10: 395)...for the contents of the collective unconscious are not only residues of archaic, specifically human modes of functioning, but also the residues of functions from [our] animal ancestry, whose duration in time was infinitely greater than the relatively brief epoch of specifically human existence (CW 7:159). It is only possible to live the fullest life when we are in harmony with these symbols; wisdom is a return to them (CW8: 794). [For the alchemists] they were seeds of light broadcast in the chaos...the seed plot of a world to come...One would have to conclude from these alchemical visions that the archetypes have about them a certain effulgence or quasi-consciousness, and that numinosity entails luminosity (CW8: 388)...it is the function of consciousness not only to recognize and assimilate the external world through the gateway of the senses, but to translate into visible reality the world within us (CW8, 342). Available at <http://aras.org/whatarearchetypes.aspx>

ⁱⁱⁱ Dr Hagelin explained that the recent discovery of the Unified Field, or E8 x E8 heterotic superstring field as it is known in the language of Unified Quantum Field Theory, represents the fulfilment of Einstein's lifelong dream of a single unified source of the diversified laws of nature. Unified Field theory is the crowning achievement of fifty years of advanced research in quantum gravity theory. Dr Hagelin said that the Unified Field theory locates a single, universal, unified field of nature's intelligence at the basis of all forms and phenomena of the universe. The Unified Field is the unified fountainhead of all the diverse streams of natural law governing the universe at every level: grand unified, electroweak unified, nuclear, atomic, molecular, macroscopic, astrophysical and cosmological scales. 'This is not a philosophical discovery,' Dr Hagelin said, 'it is a precise mathematical discovery of the foremost magnitude. This super-formula as it is called, or Lagrangian, expresses this unified reality at the basis of nature's functioning. All the atoms and molecules, macroscopic objects, stars and galaxies, everything in the universe emerges from the self-interacting dynamics of the Unified Field. Creativity is defined in terms of that which can create, and there's nothing as creative as the Unified Field which gives rise to the entire universe, and not just ours.' Dr Hagelin said that the Unified Field continuously percolates an uncountable infinity of effervescent universes all the time, each with a wide variety of laws of nature, but all based upon the self-same Constitution of the Universe, the self-same blueprint, the blueprint of the Unified Field. Available at <http://www.globalgoodnews.com/education-news-a.html?art=118728346398115>

^{iv} It is the behaviour of electrons at a subatomic level which creates the theory that there are many potential realities, it is the concept of 'superpositioning' that is present during a wave interference pattern of unobserved electrons that so provocatively reconnects spirituality and science.

THE POTENTIALS OF QUANTUM HOLOGRAPHY

Quantum nonlocality remains one of the greatest mysteries of contemporary science. New discoveries suggest that quantum emission is sufficiently coherent to obey the laws of holography. Holography refers to the indications we have from the structure of nature that every part contains the whole. While gravitation holds the universe together, it is possible that the quantum hologram helps it self-organize.

Recent experimental and theoretical developments in quantum holography suggest new paradigms for the theory of computation, the nature of information, and for human perception and beyond. The new paradigm implies a wholly quantum world where both classical models of physics and computation are rough approximations of physical reality, and where, for example, the recent experimental demonstration of quantum teleportation is a striking affirmation of the holistic nature of physical reality. According to Mitchell, the conceptual basis of quantum holography has revolutionary implications. He believes that its existence as part of nature's information structure suggests a "mindful" universe-a radical departure from classical cosmologies that are either mechanistic or creation-oriented.

Available at http://www.noetic.org/publications/research/frontiers_58.htm

Dean Radin Entangled Minds <http://www.deanradin.com/NewWeb/EMindex.html>

Dean Radin Conscious Universe <http://www.deanradin.com/NewWeb/TCUindex.html>

Dean's blog <http://deanradin.blogspot.com/>

INTENTION ON LIVING SYSTEMS

For example, a meta-analysis published in the *British Journal of Psychology* in 2004 revealed that in independently replicated, rigorously controlled, double blind laboratory experiments, the thoughts of one person had a measurable effect on the physiological state of another person. The two people in these distant healing experiments were isolated in soundproof and electromagnetically shielded chambers to exclude any ordinary signals from passing between them. And yet, when a "sending" person directed calming or activating thoughts at a "receiving" person, the receiver's body complied in the desired direction. There are as yet no well-accepted theoretical explanations for why this occurs, but evidence that it does happen is becoming increasingly persuasive.

Dean Radin, author of *The Conscious Universe: The Scientific Truth of Psychic Phenomena*, (Harper Collins, 1997) is Senior Scientist at the Institute of Noetic Sciences. Radin worked with Princeton University psychologist Roger Nelson, who in 1998 created the *Global Consciousness Project* (GCP). The results of this experiment to date show strong overall evidence for some form of mass mind/matter interaction. For example, during and immediately after the terrorist attacks of September 11, 2001 on the World Trade Centers and on the Russian school hostages in September 2004 in the city of Beslan, the random numbers being generated world-wide became unusually orderly. On days with nothing particularly interesting was happening, the random numbers reverted back to their expected random behavior. The scientists are hypothesizing that events that cause "mass mind" to become coherent affect physical matter itself.

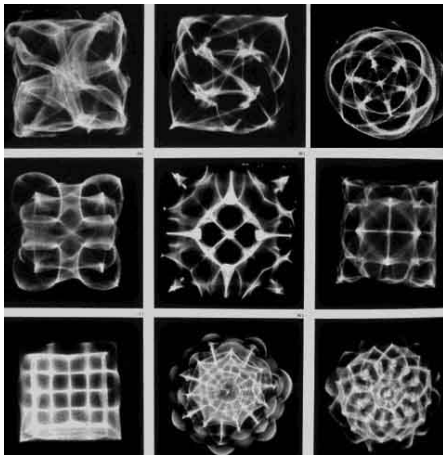
Scientists are beginning to catch up with philosophers and mystics in acknowledging that the data does seem to show that mind and matter are somehow linked in fundamental ways, and that maybe thoughts do affect the world in subtle ways.

For more info <http://noosphere.princeton.edu> or www.noetic.org/publications/research/frontiers_58.htm

^{vi} ...In 2003, German writers, Grazyna Fosar and Franz Bludorf, published a book *Vernetzte Intelligenz* [Networked Intelligence](10) wherein they argue that the DNA of all sentient beings (including plants) is linked in an intelligence network that allows for a hypercommunication of information. By "hypercommunication" they mean instantaneous communication – zero time lag. This hypercommunication takes place by means of magnetic wormholes at the sub-atomic or quantum level where our macroscopic notions of time and space no longer apply. According to this theory the DNA is actually structured as a language, and data is not only transmitted in the DNA but it is also stored. In this respect the DNA acts as a 'holographic-solitonic' computer. The DNA emits discreet pulse-like waves that hold their shape and is therefore capable of data transmission. This networked intelligence in the DNA is responsible for our individual consciousness, and our group consciousness. It is likewise responsible for our intelligence. It is the networked intelligence that actually puts the ideas into our mind. Available at <http://www.spiritualgenome.com/berkeley.htm>

^{vii} <http://physics.kenyon.edu/EarlyApparatus/Acoustics/Chladni/Chladni.html>

^{viii} The image shows a series of formations that can appear in water, by simply vibrating it at "pure" (*Diatonic*) sound frequencies. The white lines are caused by tiny free-floating particles suspended in the water, which are gathered up by the pressures of the three-dimensional waves. Hexagonal structures are clearly visible in the centers of the top-right and bottom-right panes, and the top-right pane has two very clear tetrahedrons in it, exactly as they appear on planets in the HD model. The tetrahedrons look like a snowflake from this angle:



Supplemental - Three-Dimensional Geometric Wave Patterns Caused by Sound Vibrations in Water (Dr. Hans Jenny)

Available at http://www.enterprisemission.com/articles/05-27-2004_Interplanetary_Part_2/InterplanetaryDayAfter-Part2.htm

^{ix} From the website of Alexander Lauterwasser; **Kymatik-Cymatics - Sound Figures**

When the natural scientist Ernst F.F. Chladni (who lived during the time of Goethe 1756-1827) used a violin bow to vibrate glass plates covered with fine sand and in so doing discovered what were named after him as the "Chladni sound figures", the formative force of vibration and sound, which had been recorded in so many old myths of the Creation and which was spoken about by so many philosophers of nature, became perhaps for the first time ever a phenomenon directly accessible to our senses. During the nineteen sixties and seventies, the Swiss doctor, Hans Jenny, expanded this approach to encompass vibrating fluids. By continuing this work, I am most especially interested in a phenomenology and typography of the shapes formed by vibration and sound and in the issues of morphogenesis, the shaping processes that occur in nature. Having spent many years studying the "Chladni sound figures", i.e. the interaction between individual tones and a very wide range of vibrating metal plates which appears in the sand line images as a type of "sound hieroglyphics", I then moved on to considering the effects of more complex sounds and moving music in water, a medium which is exceedingly receptive and which responds in a very sensitive manner. Available at http://www.wasserklangbilder.de/index.html?html/home_e.html Available at <http://www.cymaticsource.com/>

^x From Mr. Emoto's work we are provided with factual evidence, that human vibrational energy, thoughts, words, ideas and music, affect the molecular structure of water, the very same water that comprises over seventy percent of a mature human body and covers the same amount of our planet. Water is the very source of all life on this planet, the quality and integrity are vitally important to all forms of life. The body is very much like a sponge and is composed of trillions of chambers called cells that hold liquid. The quality of our life is directly connected to the quality of our water.

Water is a very malleable substance. Its physical shape easily adapts to whatever environment is present. But its physical appearance is not the only thing that changes, the molecular shape also changes. The energy or vibrations of the environment will change the molecular shape of water. In this sense water not only has the ability to visually reflect the environment but it also molecularly reflects the environment.

Mr. Emoto has been visually documenting these molecular changes in water by means of his photographic techniques. He freezes droplets of water and then examines them under a dark field microscope that has photographic capabilities. His work clearly demonstrates the diversity of the molecular structure of water and the effect of the environment upon the structure of the water. Available at http://www.life-enthusiast.com/twilight/research_emoto.htm

^{xi} Four highly practiced meditators focus on a device containing water; by meditation they increase or reduce its pH level by one. **Subtle Energies By William A. Tiller**




pH vs. time during the operation of an intention-imprinted electronic device.

The specific intention for experiment 6a was to change the hydrogen ion concentration of water by a factor of 10 (one pH unit). Changes produced were in the range of 0.5 to 1 pH unit. For experiment 6b, the specific intention was to increase the ratio of ATP to ADP in developing fruit fly larvae so as to significantly reduce their development time. Here, statistically significant differences (10 to 19%) in development time and , energy metabolism were observed under a variety

of experimental circumstances. For experiment 6e, the specific intention was to increase the thermodynamic activity of a specific liver enzyme, alkaline phosphatase, and again statistically significant results were produced. Available at <http://www.tiller.org/>

^{xii} Dean Radin's first experiment illustrates how human subjects, who are randomly exposed to emotional and calm pictures, exhibit prescience. An emotional reaction of apprehension or calm is recorded (by measuring EEG changes, changes in blood flow, increase in perspiration etc) as occurring between half a second and two seconds before the image is shown. This demonstrates that the subject has prescient knowledge of the image before it was transmitted.

^{xiii} With Franz Marc, Münter, August Macke and other artists, Kandinsky formed a group, Der Blaue Reiter (the blue rider), which promoted the spiritual and abstraction in art. As Charles W. Leadbeater in *Man Visible and Invisible* (1902), Kandinsky assigned special spiritual qualities to colors. "Blue is the truly celestial color," Kandinsky wrote in *On the Spiritual in Art*. "It creates an atmosphere of calmness - not like green, which represents an earthly self-satisfied stillness; it creates a solemn, supernatural depth." Kandinsky's vision was closely associated with mysticism, with a spiritual point of view. "Mythic observation is to me the foundation of all art," said Ernst Barlach and Emil Nolde wrote in his autobiography that "for me, the highest value, the form of visible life, was always inward and spiritual". Available at <http://kirjasto.sci.fi/kandinsk.htm>

^{xiv} The alchemists of the Middle Ages used  first and foremost as a general symbol representing the *art of alchemy* and secondly as a sign for combinations of , water and , fire. Combined these two triangles formed the symbol for *fire water*, the *essence* or *spiritus* of wine: *alcohol*. It was also used as a sign for *quintessence*, the *fifth element*. Available at <http://fusionanomaly.net/alchemy.html>

^{xv} Pythagoras, whose life in the seventh century BC marks the inception of Hermetic philosophy and numerological mysticism among the Greeks. He travelled the world while still in his thirties and forties, studying with every priesthood and esoteric college he could reach and procuring the texts of those he couldn't physically visit. When he finally settled down to start his own school, he credited the Hebrew Kabbalists and Hindu Brahmins for enlightening him about their number mysteries in which his own teachings about the whole numbers and Sacred Geometry were grounded. Available at <http://www.tarot.com/about-tarot/library/essays/history>.

Honeycomb - Pythagoreans perceived the hexagon as an expression of the spirit of Aphrodite, whose sacred number was six (the dual Triple Goddess), and worshipped bees as her sacred creatures who understood how to create perfect hexagons in their honeycomb. Seeking to understand the secrets of nature through geometry, the Pythagoreans meditated on the endless triangular lattice, all sixty degree angles, that results from extending the sides of all hexagons in the honeycomb diagram until their lines meet in the center of adjacent hexagons. It seemed to them a revelation of the underlying symmetry of the cosmos. Moreover, since honey and salt were the only commonly known preservatives at the time, both were symbols of resurrection or reincarnation. The dead were often embalmed in honey, especially in the large pithoi or burial vases, where they were placed in fetal position for rebirth. Demeter was "the pure mother bee" who governed the cycles of life, as was the biblical Deborah whose name means "bee." Honey cakes formed like female genitals figured prominently in worship of the Goddess. The bee was usually looked upon as a symbol of the feminine potency of nature, because it created this magical, good tasting substance and stored it in hexagonal cells of geometric mystery. With so many ancient connections with the Goddess, it was inevitable that medieval hymns addressed the virgin Mary as a "nest of honey" and "dripping honeycomb."

Available at http://de.wikipedia.org/wiki/Benutzer_Diskussion:Auto-horst

"... and the whole heaven to be a musical scale and a number..." [Aristotle's account of the Pythagoreans (*Metaphysics* A5, 985b23)]

It seemed clear to the Pythagoreans that the distances between the planets would have the same ratios as produced harmonious sounds in a plucked string. To them, the solar system consisted of ten spheres revolving in circles about a central fire, each sphere giving off a sound the way a projectile makes a sound as it swished through the air; the closer spheres gave lower tones while the farther moved faster and gave higher pitched sounds. All combined into a beautiful harmony, *the music of the spheres*. Available at http://www.dartmouth.edu/~matc/math5_geometry/unit3/unit3.html

^{xvi} This is beautifully explained by Christina Brodie in her article... **Geometry and Pattern in Nature 1: Exploring the shapes of diatom frustules with Johan Gielis' Superformula** by Christina Brodie, UK

Available at <http://www.microscopy-uk.org.uk/mag/indexmag.html?http://www.microscopy-uk.org.uk/mag/artapr04/cbdiatom2.html>

To view the effects of combining Supershapes, please see: <http://astronomy.swin.edu.au/~pbourke/surfaces/supershapes3d/#2d>

Paul Bourke's homepage: <http://astronomy.swin.edu.au/~pbourke>

Brian Darnton's homepage: www.darnton.freereserve.co.uk

Additionally, the following sites may prove of interest:

Johan Gielis' website: <http://www.geniaal.be/#>

Weisstein, Eric W. "Superellipse." From *MathWorld*--A Wolfram Web Resource. <http://mathworld.wolfram.com/Superellipse.html>

^{xvii} What is meant with non-inherent existence? Is this to say that the cup does not ultimately exist? - Not quite. - The cup exists, but like everything in this world, its existence depends on other phenomena. There is nothing in a cup that is inherent to that specific cup or to cups in general. Properties such as being hollow, spherical, cylindrical, or leak-proof are not intrinsic to cups. Other objects which are not cups have similar properties, as for example vases and glasses. The cup's properties and components are neither cups themselves nor do they imply cupness on their own. The material is not the cup. The shape is not the cup. The function is not the cup. Only all these aspects together make up the cup. Hence, we can say that for an object to be a cup we require a collection of specific conditions to exist. It depends on the combination of function, use, shape, base material, and the cup's other aspects. Only if all these conditions exist simultaneously does the mind impute cupness to the object. If one condition ceases to exist, for instance, if the cup's shape is altered by breaking it, the cup forfeits some or all of its cupness, because the object's function, its shape, as well as the imputation of cupness through perception is disrupted. The cup's existence thus depends on external circumstances. Its physical essence remains elusive.

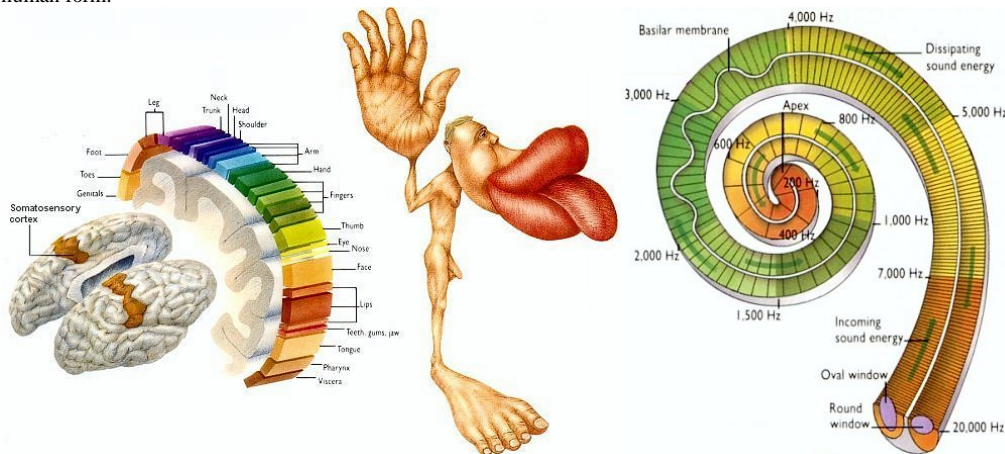
Those readers who are familiar with the theory of ideas of the Greek philosopher Plato will notice that this is pretty much the antithesis to Plato's idealism. Plato holds that there is an ideal essence of everything, e.g. cups, tables, houses, humans, and so on. Perhaps we can give Plato some credit by assuming that the essence of cups ultimately exists in the realm of mind. After all, it is the mind that perceives properties of an object and imputes cupness onto one object and tableness onto another. It is the mind that thinks "cup" and "table". Does it follow that the mind is responsible for the existence of these objects? - Apparently, the mind does not perceive cups and tables if there is no visual and tactile sensation. And, there cannot be visual and tactile sensation if there is no physical object. The perception thus depends on the presence of sensations, which in turn relies on the presence of the physical object. This is to say that the cup's essence is not in the mind. It is neither to be found in the physical object. Obviously, its essence is neither physical nor mental. It cannot be found in the world, not in the mind, and certainly not in any heavenly realm, as Plato imagined. We must conclude that the objects of perception have therefore no inherent existence.

If this is the case for a simple object, such as a cup, then it must also apply to compound things, such as cars, houses, machines, etc. A car, for example, needs a motor, wheels, axles, gears, and many other things to work. Perhaps we should consider the difference between man-made objects, such as cups, and natural phenomena, such as earth, plants, animals, and human beings. One may argue that lack of inherent existence of objects does not imply the same for natural phenomena and beings. In case of a human being, there is a body, a mind, a character, a history of actions, habits, behaviour, and other things we can draw upon to describe a person. We can even divide these characteristics further into more fundamental properties. For example, we can analyse the mind and see that there are sensations, cognition, feelings, ideas. Or, we can analyse the brain and find that there are neurons, axons, synapses, and neurotransmitters. However, none of these constituents describe the essence of the person, the mind, or the brain. Again, the essence remains elusive. Available at <http://www.thebigview.com/buddhism/emptiness.html>

^{xviii} George Berkeley discovered the "amazing truth... that nothing properly but... conscious things do exist". In modern terms, George Berkeley's doctrine of Immaterialism would support the notion that the Universe is a virtual reality. This notion can be found as far back as the ancient Greek philosopher Pyrrho of

Elis (360?-275? BC) and in the eastern philosophical tradition, this notion that **the external world is illusionary, mere 'name and form', is a dominant theme of the Hindu Upanishads dating back about 3,000 years BC.** Available at <http://www.spiritualgenome.com/berkeley.htm>

^{xix} Not all the body parts receive the same attention of the brain. The relative importance is often represented by mapping over the length of the sensory or motor cortex. These cortical maps (Figure 22b) are not drawn to scale; instead they are variously distorted to reflect the amount the neural processing power devoted to different regions. This accounts for the grotesque appearance of the human body in the homunculus, which is a translation of the body's sensory map into the human form.



Available at <http://universe-review.ca/R10-16-ANS.htm>

^{xx} That reality is an illusion constructed by our limited and inaccurate senses is a theme beautifully considered by Marshall McLuhan in the Gutenberg Conspiracy. Penny Lee explains in a passage entitled 'The biological segmentation of reality', Penny Lee in "The Whorf Theory Complex" quotes Bertalanffy: 'from that great cake of reality, every living organism cuts a slice, which it can perceive and to which it can react owing to its psycho-physical organization, that is, the structure of its receptor and effector organs', and further: 'any organism so to speak, cuts out from the multiplicity of surrounding objects [and actions!] a small number of characteristics to which it reacts and whose ensemble forms its "ambient"'. All the rest is non-existent for that particular organism. Every animal is surrounded, as by a soap bubble, by its specific ambient, replenished by those characteristics, which are amenable to it. If, reconstructing an animal's ambient, we enter the soap bubble, the world is profoundly changed. Many characteristics disappear, others arise and a completely new world is found.'

^{xxi} Einstein Meets the Vedas: Parallel Sayings in Science and Spirituality
Comparing wisdom from scientists and great religious leaders. Edited by Thomas McFarlane

A mathematical truth is timeless, it does not come into being when we discover it. Yet its discovery is a very real event. <i>Erwin Schrödinger</i>	Realization is nothing to be gained afresh; it is already there. All that is necessary is to get rid of the thought 'I have not realized'. <i>Sri Ramana Maharshi</i>
If we ask, for instance, whether the position of the electron remains the same, we must say "no"; if we ask whether the position of the electron changes with time, we must say "no"; if we ask whether the electron is at rest, we must say "no"; if we ask whether it is in motion, we must say "no." <i>J. Robert Oppenheimer</i>	He is far and he is near, He moves and he moves not. <i>The Bhagavad Gita</i>
It is a primitive form of thought that things either exist or do not exist. <i>Sir Arthur Eddington</i>	To say "it is" is to grasp for permanence. To say "it is not" is to adopt the view of nihilism. Therefore a wise person does not say "exists" or "does not exist." <i>Siddha Nagarjuna</i>
The smallest units of matter are in fact not physical objects in the ordinary sense of the word; they are forms. <i>Werner Heisenberg</i>	All things-from Brahma the creator down to a single blade of grass-are the apparently diverse names and forms of the one Atman. <i>Shankara</i>
There is no essential distinction between mass and energy. Energy has mass and mass represents energy. Instead of two conservation laws we have only one, that of mass-energy. <i>Albert Einstein</i>	...Only an arbitrary distinction in thought divides form of substance from form of energy. Matter expresses itself eventually as a formulation of some unknown Force. <i>Sri Aurobindo</i>
People like us, who believe in physics, know that the distinction between past, present and future is only a stubborn, persistent illusion. <i>Albert Einstein</i>	The past, the future...are nothing but names, forms of thought, words of common usage, merely superficial realities. <i>T. R. V. Murti</i>
The common words "space" and "time" refer to a structure of space and time that is actually an idealization and oversimplification. <i>Werner Heisenberg</i>	There is nothing like an absolute time which remains as a reality apart from successive events. Time and space are derived notions, modes of reference. <i>K. Venkata Ramanan</i>
What we perceive through the senses as empty space...is the ground for the existence of everything, including ourselves. The things that appear to our senses are derivative forms and their true meaning can be seen only when we consider the plenum, in which they are generated and sustained, and into which they must ultimately vanish. <i>David Bohm</i>	Wherefrom do all these worlds come? They come from space. All beings arise from space, and into space they return: space is indeed their beginning, and space is their final end. <i>The Upanishads</i>
Causality may be considered as a mode of perception by which we reduce our sense impressions to order. <i>Niels Bohr</i>	Time, space, and causation are like the glass through which the Absolute is seen.... In the Absolute there is neither time, space, nor causation. <i>Vivekananda</i>
A theory is the more impressive the greater the simplicity of its premises is, the more different kinds of things it relates, and the more extended is its area of applicability. <i>Albert Einstein</i>	As in science, so in metaphysical thought, that general and ultimate solution is likely to be the best which includes and accounts for all so that each truth of experience takes its place in the whole. <i>Sri Aurobindo</i>

Available at http://www.beliefnet.com/story/100/story_10011_1.html

^{xxii}

Physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world. -Einstein	All such notions as causation, succession, atoms, primary elements...are all figments of the imagination and manifestations of the mind. -Buddha
Time and again the passion for understanding has led to the illusion that man is able to comprehend the objective world rationally by pure thought without any empirical foundations—in short, by metaphysics. -Einstein	By becoming attached to names and forms, not realising that they have no more basis than the activities of the mind itself, error rises...and the way to emancipation is blocked. 21-Buddha

In our thinking...we attribute to this concept of the bodily object a significance, which is to high degree independent of the sense impression which originally gives rise to it. This is what we mean when we attribute to the bodily object "a real existence." ...By means of such concepts and mental relations between them, we are able to orient ourselves in the labyrinth of sense impressions. These notions and relations...appear to us as stronger and more unalterable than the individual sense experience itself, the character of which as anything other than the result of an illusion or hallucination is never completely guaranteed. -Einstein	I teach that the multitudinousness of objects have no reality in themselves but are only seen of the mind and, therefore, are of the nature of maya and a dream. ...It is true that in one sense they are seen and discriminated by the senses as individualized objects; but in another sense, because of the absence of any characteristic marks of self-nature, they are not seen but are only imagined. In one sense they are graspable, but in another sense, they are not graspable. -Buddha
According to general relativity, the concept of space detached from any physical content does not exist. -Einstein	If there is only empty space, with no suns nor planets in it, then space loses its substantiality. -Buddha
Physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world. -Einstein	All such notions as causation, succession, atoms, primary elements...are all figments of the imagination and manifestations of the mind. -Buddha

Available at <http://www.integralscience.org/einsteinbuddha/>

^{xxiii} Einstein Meets the Vedas: Parallel Sayings in Science and Spirituality

Comparing wisdom from scientists and great religious leaders. Edited by Thomas McFarlane

Available at http://www.beliefnet.com/story/100/story_10011_1.html

Available at <http://www.integralscience.org/einsteinbuddha/>

^{xxiv} **How do Yantras work?** ^[17]At the basis of yantra operation is something called "shape energy" or "form energy". The idea is that every shape emits a very specific frequency and energy pattern. Examples of old believes in shape energy are the yantras and mandalas of eastern philosophies, the star of David, the five pointed star (pentagon), the Christian cross, the pyramids and so on. Certain 'powers' are ascribed to the various shapes.

When one focuses on a yantra, his mind is atomically "tuned in" by resonance into the specific form energy of that yantra. The process of resonance is then maintained and amplified. The yantra acts only as a "tune in" mechanism or a doorway. The subtle energy does not come from the yantra itself, but from the macrocosm.

Basically yantras are secret keys for establishing resonance with the benefic energies of the macrocosm. Very often the yantras can put us in contact with extremely elevated energies and entities, being of invaluable help on the spiritual path. Available at <http://sivasakti.com/articles/intro-yantra.html>

^{xxv} The practice of worshipping symbolical diagrams (yantras, cakras) of the tantra has also been traced to the Vedas (e.g. Atharvaveda, Taittiriya Aranyaka).

Available at <http://ccbs.ntu.edu.tw/FULLTEXT/JR-ENG/chak.htm>

Shamasastri, R. (1929) *Kautilya's Arthashastra Arthashastra - Arthashastra* Wesleyan Mission Press.

^{xxvi} The importance of sound as a divine messenger and force is highly valued in Kabbalah, Buddhist and Hindu texts

Vedic knowledge hangs in the atmosphere as a sort of ether exuded by the gods; the truth needs only to be grasped by enlightened disciples whose heightened senses allow them to perceive it. This is why the most sacred Vedas are called *śruti* —they have been heard by holy men. Hence the description of Vedas as sound vibration in the air:

I [Krishna] personally establish the Vedic sound vibration in the form of omkara within all living entities. It is thus perceived subtly, just like a single strand of fiber on a lotus stalk. Just as a spider brings forth from its heart its web and emits it through its mouth, the Supreme Personality of Godhead manifests Himself as the reverberating primeval vital air, comprising all sacred Vedic meters and full of transcendental pleasure (Bhāgavata-Purāna 11.21.38-39).

Available at <http://www.apologeticspress.org/articles/2580>

^{xxvii} Numerical procedures, such as cutting a tarot deck, rolling dice, or dividing yarrow stalks, are used to determine the kairos, the "key moment," for the constellation of a unique synchronous phenomenon. With proper preparation, so that an archetype is already activated by a sufficiently high "charge" of psychic energy, the divinatory act can create a "hole" in the "field of consciousness through which the autonomous dynamism of the collective unconscious can break in" (von Franz 227). (von Franz 44, 199). By bringing the eternal archetypes into temporal consciousness, the divinatory act creates a "hole in time," the alchemical Fenestra Aeternitatis (Window to Eternity). The alchemists also called this hole though which autonomous spirit passes the Spiraculum Aeternitatis, or Airhole to Eternity; it corresponds to the smokehole in the top of shamans' tents, through which they ascend to the heavens and return to the mundane world. (von Franz 260-1).

Available at <http://www.cs.utk.edu/~mclennan/BA/PT/Intro.html>.

^{xxviii} "whereby 'cosmic cross-points' are created in the relative plane, at which the individual encounters the universal noumena" (Mookerjee, *Tantric Way*, p15, 1989); "within its perimeter a complexity of visual metaphors—square, triangle, labyrinthine patterns—represent the absolute and the paradoxical elements of totality"

^{xxix} The efficacy of mantra and drugs for the attainment of perfection has been mentioned by Patanjali in his Yogasutra (iv. I). Antiquity of Tantricism By Chintaharan Chakravarti, in *The Indian Historical Quarterly* Vol. VI, No.1 March, 1930 pp. 114-126. Available at <http://ccbs.ntu.edu.tw/FULLTEXT/JR-ENG/chak.htm>

Iyengar, B.K.S. (2002) *Light on the Yoga Sutras of Patanjali* Thorsons; New Ed edition (21 Oct 2002) 288 pages.

^{xxx} The identity of the ancient plant known as Soma is one of the greatest unsolved mysteries in the field of religious history. Common in the religious lore of both ancient India and Persia, the sacred Soma plant was considered a God, the ancient worshipper who imbibed it gained the powerful attributes of this God. The origins of Soma go back to the common Aryan ancestors of both the Vedic Hindu religion of India and the Persian religion of Mazdaism. This common ancestry can be seen in surviving religious texts such as the Hindu Rig Veda and the Persian Avesta. A major connection is their use of a sacred plant, known in India as Soma, and in Persia as Haoma. From ancient descriptions, Soma/Haoma must have been a very special plant. The qualities of this sacred herb are given in poetic detail, and the love and admiration these ancient authors had for the plant can still be felt thousands of years after the texts were composed. Available at <http://www.cannabisculture.com/articles/3155.html>

^{xxxi} most frequently they contained certain conventional religious images. I occasionally saw Buddhas and mandalas, but most of- ten I saw motifs that had to do with Amazonian Indian [mythology](#). (8) This Article is from the Fall 1995 Issue of Shaman's Drum^[17] A journal of experiential shamanism. Available at <http://diseyes.lycaem.org/fresh/yagmree.htm>

DMT - by "Gracie and Zarkov" The visuals were interlocking sinusoidal patterns arranged in a Japanese chrysanthemum pattern that filled my entire visual field. The pattern was ever-changing and the colors of the individual patterns changed independently of the underlying pattern. The colors were intense and came in a magnificent variety of colors: metallics, monochromes, pastels, each flickering in and out of existence as if obeying some undetected ordering principle. An idea came into my head that I was seeing the 'true universe' or universe as it really exists. That is to say, I was seeing 'directly' the vibrations of every particles in the universe that 'I' was somehow in contact with. 'I' was directly 'seeing' the universe without ordering it into an arbitrary reality tunnel -- i.e., perceived 'solid, objective reality.' The visual pattern seemed to be a sort of m-dimensional lissajous curve formed by the intersection of 'I' with the shock wave of space-time causality. The overwhelming sense of a 'presence' did not disappear when the vision changed to visual patterns, but remained an almost palpable entity as long as the visuals remained intense. I never felt the foreboding -- let alone the direct changes -- I have felt under the influence of stropharia mushrooms whenever the

feeling of contact with the presence has been strong. The presence was just there and 'very' powerful. I felt that I had glimpsed Whitehead's god. Available at <http://diseyes.lycaem.org/dmt/howdmt.why>

xxxii **Synaesthesia** is a neurological condition in which one sense triggers another for example; when music is played colours are seen in sympathy with the harmony. The word 'synaesthesia' comes from the Greek *syn* (joining) and *aisthesis* (sensation).

Chroma, by Derek Jarman (1994) is a meditation on colour of music. 'the painter Kandinsky who heard music in colours said: "Absolute green is represented by the placid middle notes of a violin" 'It was on a tortoiseshell lyre that Apollo played the first note. A brown note. From the trees came the polished woods to make the violin and bass, which snuggled up to the golden brass. In the arms of yellow, brown is at home' 'You set the colours against each other and they sing. Not as a choir but as soloists. What is the colour of the music of the spheres but the echo of the Big Bang on the spectrum, repeating itself like a round' This an ancient theme, going back at least as far as Pythagoras and various occult cosmologies linking musical notes, colours and heavenly bodies in a cosmic harmony. The colour thought forms of Annie Besant and Charles Leadbeater, attempted to show the colour forms they believed were left by different kinds of music, the music of Gounod hanging over a church for instance. More recently there have been attempts to scientifically ascribe colours to sound, based on analysis of the frequency spectrum to identify pink noise, blue noise and so on.

Available at <http://history-is-made-at-night.blogspot.com/>

Synaesthesia The experience of one sense as a result of the stimulation of a different sense; for example, an experience of colour may result from hearing a sound. Approximately 1 in 2,000 have the condition, and the majority are female. <http://encyclopedia.thefreedictionary.com/synaesthesia>

xxxiii New research has revealed a molecular basis for the "Mozart effect" - the observation that a brief stint of Mozart, but not other music, may improve learning and memory.

Rats that heard a Mozart sonata expressed higher levels of several genes involved in stimulating and changing the connections between brain cells, the study showed. The team, including the researcher who first proposed the Mozart effect, hope the results will help them design music therapy treatments for people suffering from neurodegenerative diseases such as Alzheimer's.

The Mozart effect first came to light in a 1993 paper in *Nature* (vol 365, p 611), when Fran Rauscher, a neuroscientist at the University of Wisconsin Oshkosh, US, and colleagues showed that college students who listened to Mozart's Sonata for Two Pianos in D Major for 10 minutes performed better on a spatial reasoning test than students who listened to new age music or nothing at all. Available at <http://www.newscientist.com/article.ns?id=dn4918>

xxxiv **Dolphin therapy fights depression**

A University of Leicester team tested the effect of regular swimming sessions with dolphins on 15 depressed people in a study carried out in Honduras. They found that symptoms improved more among this group than among another 15 who swam in the same area - but did not interact with dolphins. The study is published in the British Medical Journal.

The researchers have speculated that the ultrasound emitted by dolphins as part of their echolocation system may have a beneficial effect. Researcher Professor Michael Reveley said: "Dolphins are highly intelligent animals who are capable of complex interactions, and regard humans positively. "We need to remember that we are part of the natural world, and interacting with it can have a beneficial effect on us."

Shared brain system

Dr Iain Ryrie said that humans and dolphins shared a limbic brain system that plays a key role in regulating many of the body's physiological and emotional processes. "As humans we are hard-wired to need touch and to be connected to others... So it's possible for humans to make loving relationships with many different mammals because of this biological/social similarity." Available at <http://news.bbc.co.uk/1/hi/health/4465998.stm>
<http://www.aquathought.com/idatra/symposium/95/nathason.html>

The theory behind dolphin assisted therapy is based on two philosophies. One of these is that the unconditional love and support a dolphin has to offer can benefit children and mentally ill patients in many ways. As with most animals, a dolphin seems to have human-like emotions, so a deep trusting bond can develop between patient and mammal. Some proponents of dolphin assisted therapy claim that the compassion a dolphin displays increases the patient's self-confidence, because the patient is never judged. Increased self-confidence can lead to better social skills and academic improvement. <http://www.ulst.ac.uk/papa/dolphin.html>
The second part of the theory involves a more scientific approach. It involves echolocation (echolocation: a high-pitched sound sent out by the dolphin that bounces off an object and returns to the whale. The dolphin interprets the returning echo to determine the object's shape, direction, distance, and texture). <http://www.zoomdinosaurs.com/subjects/whales/glossary/Echolocation.shtml> Some say that the dolphins' use of sonar and echolocation produce changes in the body tissue and cell structure of patients who associate with them. Others believe that sound waves emitted by the dolphins in communication and echolocation stimulate healing. <http://www.idw.org/healing.html> A diminishing of anxiety and depression, enhanced learning in handicapped children, and pain relief are all attributed, by some researchers, to dolphin echolocation <http://www.interspecies.org/dolphin/human/research>. Echolocation is also thought to help increase attention span, develop motor skills, and develop better co-ordination in children <http://www.ulst.ac.uk/papa/dolphin.html>.

Supporters of dolphin assisted therapy find powerful support for their position in these case studies. Deeply troubled children seem to develop greater self-confidence and improved social skills. The critics of dolphin assisted therapy point out that there is no scientific proof of the effectiveness of this form of therapy. Additionally, keeping wild creatures in captivity for an unproven purpose denies them a significant part of their natural existence in the open seas, with their own kind. <http://www.positivehealth.com/permit/Articles/Animals/wolgro38.htm>

xxxv For the Pythagoreans different musical modes have different effects on the person who hears them; Pythagoras once cured a youth of his drunkenness by prescribing a melody in the Hypophrygian mode in spondaic rhythm. Apparently the Phrygian mode would have had the opposite effect and would have overexcited him. At the healing centers of Asclepieion at Pergamum and Epidauros in Greece, patients underwent therapy accompanied by music. The Roman statesman, philosopher and mathematician, Boethius (480-524 A.D.) explained that the soul and the body are subject to the same laws of proportion that govern music and the cosmos itself. We are happiest when we conform to these laws because "we love similarity, but hate and resent dissimilarity". (*De Institutione Musica*, 1,1. from Umberto Eco, *Art and Beauty in the Middle Ages*. p. 31). Available at <http://www.aboutscotland.co.uk/harmony/prop.html>